VCIIC - RECEIVER

INTERFACE SPECIFICATION

M/A-COM
CABLE HOME GROUP

PRELIMINARY

VCIIC - RECEIVER

INTERFACE SPECIFICATION

27 November 1984

M/A-COM LINKABIT, Inc.
3033 Science Park Road
San Diego, CA 92121

Sent 1/8/85

AVCOM of Virginia, Inc.
Company Name

(1) MODEL NAME: All Manufactured receivers (COM-2A/B, COM-3/R, COM-11, COM-12, COM-65/T COM-66/T, SCPC-100, COM-20T, COM-23T, COM-63RT)

(2) Please describe specific interface problems, if any: No interface problems are evident, at this time.

(3) Will you provide modification instructions to your customers? We intend to provide modification instructions to our customers if it becomes necessary.

(4) Will you provide modification kits for your equipment? We intend to provide modification kits for our equipment if it becomes necessary.

(5) Will you provide factory service modication for your equipment? We intend to provide factory modification if necessary.

(6) What additional information is required from M/A-COM to allow you to provide product service and support to the customer? We would like interface schematics of the descrambling equipment. Ie schematics of all input circuitry to the M/A COM decoder.

(7) Will you provide modification instructions to M/A-COM? We would anticipate being able to provide modification instructions to M/A COM if it became necessary.

(8) Who within your organization should questions regarding your product be referred to?

Name: Andy Hatfield
Address: AVCOM of Virginia, Inc.
500 Southlake Blvd.
Richmond, VA 23236
Telephone Number: 804-794-2500

(9) Please send this completed form to:

Mr. George Bell
M/A-COM Satellite Electronics
P. O. Box 640
Newton, North Carolina 28658

Your assistance and cooperation are greatly appreciated.

M/A-COM

Executive Offices

CABLE HOME GROUP

P.O. BOX 339   117 4TH ST., N.W.
HICKORY, NORTH CAROLINA 28603
704-324-1770   FAX: 704-324-2760

December 31, 1984

Mr. Andrew Hatfield, President
AVCOM OF VIRGINIA, INC.
500 Southlake Blvd.
Richmond, Virginia 23236

SUBJECT: M/A-COM VideoCipher Descrambler Headend Interface Requirement

Dear Mr. Hatfield:

As you are aware, there are plans to scramble some of the premium television programs being distributed via satellite to the Cable TV industry. At least two premium programmers have announced plans to secure their satellite signals with M/A-COM's VideoCipher* technology. Your company has been a significant supplier of satellite receiving equipment to this industry. We feel therefore, it is important that you are familiar with the implementation phase of this program, and the details of the interface requirements between the receiver and the descrambling equipment.

We have enclosed technical interface specifications for review by your technical personnel. The intent is for you to determine if there are any potential interface problems with any of your various receiver products and plan accordingly to provide the necessary support to your customers.

The rollout of HBO's program has begun and the Showtime rollout is scheduled for the first quarter of 1985. During the deployment phase, programmers will be running simultaneous scrambled and unscrambled transmissions until such time as all of their affiliates have completed their installations. When these are completed and satisfactorily tested, the programmer will convert to scrambled versions. To ensure a smooth implementation of this program it is requested that you have appropriate personnel evaluate the interface requirements and complete the attached questionnaire.

*TM

We appreciate your assistance and support of this program. Should you have any questions or need additional information, please let us know.

Sincerely,

M/A-COM, INC.

James F. Bunker

James F. Bunker
Vice President, Corporate
Marketing

JFB/vcl

Enclosures

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1. Introduction

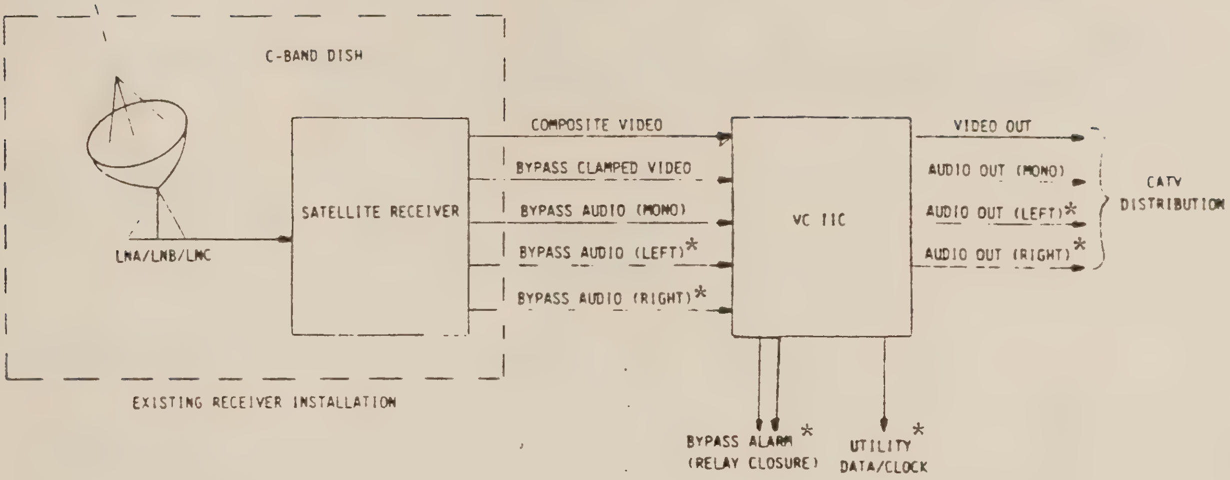
This document specifies the interface between C-band satellite receivers and M/A-COM's VCIIC equipment for cable headend applications. The VCIIC is a descrambler unit which has been designed for compatibility with most current satellite receivers. The VCIIC unit allows cable headends to process scrambled television signals which originate at the uplink facilities of program suppliers operating under the VCII scrambling system.

2. System Configuration

Figure 2-1 depicts the C-Band Headend terminal upgraded with a VCIIC descrambler unit. The unit processes the unclamped, deemphasized, composite video waveform. Those receivers lacking either a deemphasis network or an unclamped output, require modification. The input video gain is adjustable to accommodate an appreciable signal range. The unclamped composite video signal, when scrambled, includes encrypted audio and control channel data.

The descrambler unit also accepts clamped video and audio signals for bypass operation. These inputs are automatically directed to the descrambler unit outputs when the lack of a scrambled composite video signal is detected.

The VCIIC outputs consist of clamped video, stereo or monaural audio, a data/clock utility channel, and a bypass relay closure for alarm purposes.



*These are optional signals; may not be used by all programmers.

Figure 2-1. C-band Headend Receive Terminal with a VCIIC Descrambler

3. Interface Specification

3.1 Composite Video Output from Receiver

Signal Type:	Unclamped, unfiltered, deemphasized NTSC, composite baseband output and, if present, energy dispersal and audio subcarriers, which are not used by VC II Systems.
Deemphasis:	CCIR REC. 405-1.
Video Polarity:	Negative sync.
Signal Level:	100 mV p-p to 1.1V p-p. 1 V p-p ± 10% is recommended.
Output Impedance:	75 ohms, AC coupled (with minimum of 1500 µF coupling capacitor) or DC coupled (with maximum DC offset of ± 5 V)
Output Return Loss:	20 dB minimum.
Frequency Response:	± 0.5 dB; 30 Hz to 3.58 MHz. ± 1.0 dB; 3.58 MHz to 4.2 MHz.
Chrominance-Luminance Delay Inequality:	± 25 nsec maximum.
Differential Gain:	5% p-p max. (10-90 APL).
Differential Phase:	5° p-p max. (10-90 APL).
Line Time Distortion:	5 IRE p-p max.
Field Time Distortion:	5 IRE p-p max.
Signal-to-Noise: (weighted)	47dB minimum with deemphasis.

3.2 Bypass Clamped Video from Receiver

Signal Type:	Clamped, filtered, deemphasized NTSC baseband output
Deemphasis:	CCIR REC. 405-1
Video Polarity:	Negative sync

Signal Level:	1V p-p nominal
Output Impedance:	75 ohms
Output Return Loss:	20 dB minimum

3.3 Bypass Audio Output from Receiver

Signal Type:	Baseband audio
Signal Level:	+7 to +17 dBm peak
Output Impedance:	600 ohms, balanced